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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,137	02/16/2005	Dirk Herbert Teeuw	PHIL020765US1	1790
24737 7590 04/10/2009 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510				
EXAMINER				
DEFRANK, JOSEPH S				
ART UNIT		PAPER NUMBER		
3724				
MAIL DATE		DELIVERY MODE		
04/10/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/525,137

**Applicant(s)**

TEEUW ET AL.

**Examiner**

JOSEPH DEFRANK

**Art Unit**

3724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to communication received on 1/21/09. Claims 1-3 and 5-20 are pending.

#### ***Claim Objections***

2. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. This limitation was added into independent claim 8 with the amendment filed on 1/21/09. Examiner notes that similar claim 4 was canceled in the same amendment for the same reason.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 19 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claim 19 states the limitation, "each pair including a first layer of carbon in elemental form and a second metal layer," which was not previously part of the original specification or the original claims. Examiner notes that everywhere in the original specification, the first layer is referred to as either

"comprising carbon" (the first two paragraphs of the specification) or "mainly comprising carbon" (everywhere else in the specification). Neither instance described limits the first layer to "carbon in elemental form." Carbon in elemental form is pure carbon only. A first layer (mainly) comprising carbon can be any carbon based compound, unlike elemental carbon, which can only be carbon.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-3, 6, 7, 9-11, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sastri (US Patent 3,835,537 as previously cited) in view of Wong et al. (US Patent 5,776,615 as cited in IDS).
7. With respect to claims 1, 2, 19, and 20, Sastri discloses a cutting member (razor blade 20) having a metal substrate which is provided with a cutting edge (tapered portion 30 shown in figure 2), at least a portion of the substrate including the cutting edge being provided with a coating (outer chromium coating 36, see column 5 lines 46-49), the coating is layered on the substrate in multiple coats as shown in figure 4. Further, Sastri discloses the coating comprising an implanted layer of Cr (36) that is implanted into the metal substrate. Examiner notes that the word "implant" merely means to fix firmly to (see dictionary.com). The blade of Sastri clearly has Cr layers which are fixed to the blade body. Sastri does not disclose the coating comprising carbon, characterized in that the coating comprises a plurality of stacked pairs of layers, each pair comprising a first layer mainly comprising carbon and a second layer mainly

Art Unit: 3724

comprising a metal, and each pair having a thickness between 1 and 10 nm. Examiner notes that Sastri does disclose the coating comprising an implanted layer of Cr that is implanted into the metal substrate.

Wong et al. discloses a process for making superhard composite materials out of carbon and metal alternating layers for use in cutting devices. "The composite material may comprise a plurality of alternating layers comprising the carbon nitrogen compound each deposited on a respective layer of metal or metal compound to form a multi-layered, superlattice coating wherein each layer is ion bombardment densified during deposition and each layer has a thickness in the range of about 0.5 nm to about 100 nm (nanometer). Such a coating exhibits a hardness substantially exceeding (e.g. 2 times) the hardness of each individual layer in homogenous form" (column 4 lines 4-12). Wong et al. also discloses that chromium is an acceptable metal to use as it falls within group VI of the periodic table of elements (see column 3 line 60). In the setup disclosed by Wong et al, the metal/carbon pair of a layer has a thickness from 1-200nm, which overlaps sufficiently with the range 1-10nm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the solely chromium layers of Sastri with an alternating carbon nitrogen and chromium layered pair setup in view of the teachings of Wong et al. in order to create a harder cutting surface. Further, with respect to claim 2, examiner notes the second layer in this setup is a Cr layer.

Examiner notes that the first layer, in the above modified setup includes carbon (as CN<sub>x</sub> as taught by Wong et al.). Although the entire layer is not in the elemental form

Art Unit: 3724

of carbon, carbon in the elemental form exists just by the nature of the element carbon being present. Further, because the claim begins with the phrase "comprising," the layer is not limited to carbon and carbon alone.

8. With respect to claim 3, Wong et al. discloses using the metal layer having a thickness ranging from 0.5 to 100 nm. 1.6 to 2.0 nm is fully encompassed by this range.

9. With respect to claims 6 and 7, Sastri in view of Wong et al. discloses that the total thickness of material added to the substrate by layering has a thickness of at least 400 Angstroms (40 nm; abstract of Sastri). No specific size of the total layer is given. However, It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide enough layered pairs so that the thickness of the coating was in the range of 80 - 120 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. With respect to claim 9, the modified apparatus of Sastri discloses the coating having a hardness approximately four times the hardness of Cr. Examiner notes that hardness is measured in many different ways because the term hardness can mean anything from resistance to shape change to resistance to scratching. As best understood, the superlattice structure of Sastri in view of Wong et al. results in a layered structure having a hardness of approximately four times that of chromium.

11. With respect to claims 10 and 11, the modified apparatus of Sastri discloses the coating having a resistance to wear which exceeds a resistance to wear provided by a coating of diamond-like carbon. Examiner notes that one measure of "a resistance to

wear" is hardness itself. Since the coating disclosed by Sastri in view of Wong et al. is indeed harder than an example of a DLC, it has a higher resistance to wear. Likewise, a blade which doesn't wear as quickly as another also has a longer lifetime of use.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sastri (US Patent 3,835,537 as previously cited) in view of Wong et al. (US Patent 5,776,615 as cited in IDS) as applied to claim 1 above, and further in view of Sanderson (US Patent 3,838,512 as previously cited).

Sastri in view of Wong et al. does not disclose a layer of Cr and a layer of CrN between the substrate and the layered pairs. Sanderson discloses a razor blade having a first layer of chromium to provided added strength and a second layer of a chromium based nitride which acts as better substrate for adhesion to following layers (column 7 lines 13-24). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a layer of chromium followed by a layer of chromium nitride before the stacked pairs of Sastri in view of Wong et al. based on the teachings of Sanderson in order to provide a stronger razor that is a better substrate for adhesion of a following layer.

13. Claims 8, 12-15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sastri in view of Wong et al. as applied to claims 1-3, 6, 7, and 9-11 above, and further in view of Grewal et al. (US Patent 5,142,785 as previously cited).

Sastri in view of Wong et al. (as applied to claim 1 above) does not disclose the blade being mounted in any sort of tool for shaving hair as is claimed in claim 8. Examiner notes that hand held razors are very common and well known in the art. The

use of coated blades in the heads of these razors is also very well known in the art. Grewal et al. discloses mounting a coated razor blade in a shaver head (as shown in figure 1).

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sastri in view of Wong et al. and further in view of Grewal et al. as applied to claims 8 above, and further in view of Sanderson.

The modified apparatus of Sastri does not disclose a layer of Cr and a layer of CrN between the substrate and the layered pairs. Sanderson discloses a razor blade having a first layer of chromium to provided added strength and a second layer of a chromium based nitride which acts as better substrate for adhesion to following layers (column 7 lines 13-24). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a layer of chromium followed by a layer of chromium nitride before the stacked pairs of the modified blade of Sastri based on the teachings of Sanderson in order to provide a stronger razor that is a better substrate for adhesion of a following layer.

15.

#### ***Response to Arguments***

16. Applicant's arguments filed with respect to claims 1-3 and 5-20 have been fully considered but they are not persuasive.

17. Applicant argues that the use of Sanderson is improper because Sastri in view of Wong et al. and further in view of Sanderson does not disclose "the coating comprises an implanted layer of Cr that is implanted into the metal substrate." Examiner



respectfully disagrees. Examiner notes that Sanderson is not relied upon to teach the implanted layer of Cr. This is already present in the base reference of Sastri.

Sanderson is relied upon to teach that the pair of layers closest to the substrate is a layer of Cr followed by a layer of CrN (as is required by claims 16 and 5). Sanderson uses this technique to provide added strength and better substrate adhesion to the following layers (column 7 lines 13-24).

18. Applicant argues that "Wong merely shows a layering of a carbon nitrogen compound such as  $CN_x$  deposited on a metal layer." Examiner respectfully disagrees. "The composite material may comprise a plurality of alternating layers comprising the carbon nitrogen compound each deposited on a respective layer of metal or metal compound to form a multi-layered, superlattice coating wherein each layer is ion bombardment densified during deposition and each layer has a thickness in the range of about 0.5 nm to about 100 nm (nanometer). Such a coating exhibits a hardness substantially exceeding (e.g. 2 times) the hardness of each individual layer in homogenous form" (emphasis added; column 4 lines 4-12).

### ***Conclusion***

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 3724

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH DEFRANK whose telephone number is (571)270-3512. The examiner can normally be reached on Monday - Thursday; 9am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3724

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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